Army tanks pass through the "Arches of Victory" in Baghdad, Operation *Iraqi Freedom*

1st Combat Camera Squadron (John L. Houghton)

"Everybody Wanted Tanks"
Heavy Forces in Operation *Iraqi Freedom*

By JOHN GORDON IV *and* BRUCE R. PIRNIE

This article reviews the performance of U.S. Army, U.S. Marine Corps, and British armored forces during Operation *Iraqi Freedom*. Although much speculation on the future of warfare tends to downplay heavy forces, this operation shows that close combat remains inevitable and that tanks and mechanized infantry still dominate close combat. Although the focus is on major combat operations in Iraq from March 19 to May 1, 2003, the conclusions have remained valid during the ensuing counterinsurgency—for example, during combat in Fallujah.

Depending on how the Marine regimental combat teams (RCTs) are counted, heavy forces accounted for either 4 or 8 of the 16 ground maneuver brigades/regiments committed to Iraq before the fall of Baghdad in mid-April. There were four classic heavy brigades (three in the U.S. Army's 3d Infantry Division [Mechanized] plus the British 7th Armored Brigade). The Marine RCTs could also be considered heavy forces since

Lieutenant Colonel John Gordon IV, USA (Ret.), is a senior military researcher at RAND. Bruce R. Pirnie is a senior analyst at RAND.

they included roughly 130 tanks and over 450 amphibious assault vehicles (AAV–7s) serving as armored personnel carriers. Of the infantry the Marines initially deployed, all but three battalions rode in AAVs, with the remainder riding in trucks. Three of the Marine RCTs were organic to 1st Marine Division, while the fourth formed the basis of Task Force Tarawa, a brigade-sized force from 2d Marine Division that was under direct control of 1st Marine Expeditionary Force.

Total coalition tank strength was roughly 450 vehicles at the start of the operation. The 3d Infantry Division included over 200 M1A1s in its tank battalions and cavalry squadron. The 1st Marine Expeditionary Force had two tank battalions (virtually all the tanks in the active Marine Corps), with some tanks being provided to each of the three RCTs of 1st Marine Division. Additionally, one company of Marine Corps Reserve tanks was activated to support Task Force Tarawa. The British Army deployed two tank battalions in 7th Armored Brigade with a total of 116 Challenger 2 tanks.[1]

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The British had about 120 Warrior infantry fighting vehicles in Iraq, comparable to the U.S. Army's Bradley. The Warrior has a 30 millimeter (mm) automatic cannon but does not mount an anti-tank guided missile as the Bradley does. The 3d Infantry Division had approximately 250 Bradleys in Iraq including the M–2 infantry and M–3 cavalry versions of the vehicle. The AAV–7s of the Marine Corps carry more dismountable infantry than either the Warrior or Bradley (20 troops can be carried in the passenger compartment of the AAV), but the Marine vehicle's armor is closer to that of an M–113. Most of the AAVs mount a side-by-side 50-caliber machinegun and 40mm grenade launcher in the turret. Unlike the U.S. and British armies, where the infantry fighting vehicles are organic to the mechanized infantry battalions, the Marines have a large assault amphibian battalion at division level that attaches its vehicles to infantry regiments based on the mission. Most Marine infantry in Iraq rode in AAVs and were essentially mechanized infantry. The Marines often refer to infantry battalions with attached AAVs as being "mech-ed up," while the version of the AAV that includes the 50-caliber and 40mm weapons is often called "up gun" because earlier versions of the vehicle had only a machinegun.[2]

High praise for heavy forces appears throughout the written reports and interviews on *Iraqi Freedom*. The 3d Infantry Division After Action Report states:

This war was won in large measure because the enemy could not achieve decisive effects against our armored fighting vehicles. While many contributing factors helped shape the battlespace (air interdiction, close air support, artillery), ultimately war demands closure with the enemy force within the minimum safe distance of artillery. Our armored systems enabled us to close with and destroy the heavily armed and fanatically determined enemy force often within urban terrain with impunity. No other ground combat system currently in our arsenal could have delivered similar mission success without accepting enormous casualties, particularly in urban terrain. . . . Decisive combat power is essential, and only heavily armored forces provide this capability.[3]

Tanks

The authors interviewed personnel from the U.S. Army, U.S. Marine Corps, and British army about main battle tanks in Iraq. Without exception or qualification, they praised the performance of tanks, describing them as vital to the quick victory.

The United Kingdom Minister of Defence, Procurement, stated, "Operation *Telic* [the British designation for *Iraqi Freedom*] underscored the value of heavy armor in a balanced force." He also stated that *Iraqi Freedom* confirmed "protection is still vital" and reemphasized "the effect of heavy armor in shattering the enemy's will to fight."[4]

Tanks were further esteemed during *Iraqi Freedom* for several reasons.

■ *Tanks were highly resistant to fire.* The most common Iraqi antiarmor weapon was the rocket-propelled grenade (RPG), especially the Soviet designed RPG–7. This weapon has both high explosive and shaped charge warheads. The antiarmor shaped charge can penetrate up to 300 millimeters (nearly 12 inches) of solid, rolled homogenous armor plate under optimal conditions, but still failed to penetrate the advanced armor of the Abrams and Challenger 2 in most locations. British army sources stated that one of their Challengers operating near Basra absorbed 15 hits by RPGs with no penetration. The only British Challenger knocked out during the war was accidentally hit by another British tank.[5] A tank battalion commander in the 3d Infantry Division stated that one of his Abrams took 45 hits from various weapons, including heavy machineguns, anti-aircraft guns, mortar rounds, and rocket-propelled grenades, with no penetration.[6] A few Abrams were penetrated by cannons and RPGs, usually in the rear flank or rear of the vehicle. In a few instances, enemy fire

broke open the fuel cells of the external auxiliary power unit, allowing fuel to seep into the engine, causing a fire.[7] No Army or Marine crewman died in an Abrams tank due to enemy fire penetrating the vehicle during major combat operations.

■ *Tanks led the advance.* Almost always, Army, Marine Corps, and British tanks led force movements to contact. Tanks were essential because situational awareness regarding enemy forces was poor at the regimental/brigade level and below. While operational-level commanders often had enough situational awareness to meet their needs, tactical commanders needed a degree of detail that was rarely available. As a result, there was constant danger of encountering the enemy without warning. Since the tanks could survive hits from a concealed enemy, they were the weapons of choice for the "tip of the spear."[8] Indeed, this operation demonstrated the inverse relationship between force protection and situational awareness. In circumstances where situational awareness was poor, as it normally was at the brigade/regimental level and below, there was a clear need for strong armor protection.

■ *Tanks immediately took the enemy under fire.* Tanks were immediately responsive when contact was made with the enemy. Compared to artillery that could respond in 2 to 4 minutes, or fighters or bombers that could arrive on scene in 5 to 20 minutes, tanks could open fire within seconds. The 3d Infantry Division and 1st Marine Division noted that their infantry fired few antiarmor weapons because tanks were almost always in front and engaged the enemy in timely fashion.

■ *Tanks were highly effective in urban operations.* According to conventional wisdom, tanks should be extremely vulnerable in urban terrain, but in fact tanks led most advances into Iraqi cities, most famously during the Baghdad "thunder runs." This was true in the case of the Army, Marine, and British forces. The Army's 3d Infantry Division developed an urban operations technique in which two Abrams would be closely followed by two Bradleys with mounted infantrymen and often an engineer vehicle behind the Bradleys. The tanks would flush the enemy when Iraqi forces fired on the tanks or ran from them, allowing the Bradleys to employ their 25mm cannons and machineguns. The British used similar techniques in Basra where tanks would lead the advance, often smashing holes in buildings that allowed the infantry to enter and occupy the structure. The Marines also used tanks as the leading element going into urban areas. The most important difference between Army and Marine Corps urban tactics was that the Marines employed more dismounted infantry who operated close to the tanks. The British also made extensive use of their armored vehicles in urban operations in the Basra area.

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■ *Tanks had shock effect.* Some interviewees pointed out that "tanks got respect" and that many Iraqi fighters ran from them. For example, one senior Marine described an intense firefight at a bridge in An Nasiriyah on March 24. The decibel level of the firefight was "about 90." When two Marine Corps tanks rumbled onto the bridge, the volume of enemy firing "immediately went to about a 20."[9] However, some irregular forces pressed their attacks in nearly suicidal fashion.

■ *Fuel supply was less of a problem than originally thought.* The M1A1 has a well-deserved reputation as a "fuel hog." Nevertheless, in *Iraqi Freedom* both the Army and Marines were able to keep their tanks fueled without undue difficulty. In the case of 3d Infantry Division, the maneuver brigades were provided with extra fuel trucks prior to the offensive, thus making resupply relatively easy. The Marines had a somewhat greater challenge, but in discussions with all three RCTs in 1st Marine Division, fuel was never critical despite the fact that over 450 miles was covered from Kuwait to Baghdad.

Tanks had a few relatively minor drawbacks. They were a greater maintenance challenge than the lighter armored and wheeled vehicles. By the time they reached Baghdad, most tanks were combat capable but far from fully mission capable, largely due to an overall shortage of spare parts that plagued operations in Iraq. In addition, the tanks needed a better antipersonnel round for the main gun. Most of the threat in Iraq came from light infantry and militia. The most effective tank weapon was the multipurpose antitank (MPAT) round, which was used against enemy infantry, bunkers, and buildings.[10] Several Army and Marine Corps tank units totally expended their MPAT load during the war. Army and Marine officers both stated that tanks need a better weapon to engage dispersed infantry. Coalition tankers expended huge amounts of machinegun ammunition from their co-axial and turret-mounted guns.

In summary, the tank was the single most important ground combat weapon in the war. Tanks led the advance, compensated for poor situational awareness, survived hostile fire, and terrorized the enemy. These attributes contributed much to the rapid rate of advance from Kuwait to Baghdad. A senior Marine Corps infantry officer offered an appropriate summation of what the authors repeatedly heard: "Everybody wanted tanks."

Infantry Fighting Vehicles

Mechanized infantry worked closely with tanks in small combined arms teams. The Army employed the Bradley (mostly the M–2, but also the cavalry M–3); the Marines used the AAV–7; and the British used the Warrior. The Bradley and Warrior both have stabilized automatic cannons and good protection against light cannon fire and rocket-propelled grenades. Both vehicles carry roughly nine personnel, who may dismount or fire from the vehicle. Exploiting poor Iraqi marksmanship, Soldiers often fired from atop the Bradleys.

The Marine AAV is primarily an amphibious tractor that is optimized for ship-to-shore move-

Tanks defending the intersection of Highways 1 and 27 in Iraq

1st Marine Division (Paul L. Anstine)

ment. It has light armor protection against small arms fire and artillery or mortar fragments. The AAV is a large vehicle that can carry some 20 infantrymen in the rear. Although Marine infantry fought outside their vehicles far more often than the Army infantry, the large number of AAVs in 1st Marine Division meant the Marine rifle battalions were for the most part mechanized infantry.

The Army, Marines, and British forces all employed their armored infantry carriers in a generally similar manner. During movements to contact—the most frequent tactical operation in *Iraqi Freedom*—tanks would almost always lead. Close behind would be infantry fighting vehicles, or AAVs in the case of the Marines. The tanks would usually make contact with the enemy first. When the Iraqis fired on the leading tanks, they would give away their positions, creating targets for the Bradleys, Warriors, and AAVs.

The Marines dismounted their infantry from their vehicles more often than the Army, especially in built-up areas, for several reasons. Marine tactics stress dismounted operations, and the AAV is not as well protected as the Bradley. Importantly, the Marines who rode in the AAVs were essentially temporary passengers since the Marine regiments do not normally have organic infantry fighting vehicles as do the mechanized units of the U.S. and British armies. The Marines believed there were advantages to dismounting their infantry in built-up areas since they could then provide close support for armored vehicles. Officers of 1st Marine Tank Battalion, supporting RCT 7, thought that no tank in their battalion was hit by rocket-propelled grenades during the campaign because of dismounted infantry support. In contrast, 2d Marine Tank Battalion's tanks suffered numerous hits while operating with RCT 5. Compared to this dismounted technique that relied heavily on infantry, the Army tended to keep mechanized infantry mounted inside their Bradleys longer than the Marine infantry stayed in their AAVs.[11]

The weapons of the infantry fighting vehicles (25mm cannon in the Bradley, 30mm in the Warrior, plus machineguns, or the 50-caliber/40mm combination in the "up gun" AAVs) often proved more appropriate than the main guns of the tanks. Because the most frequent targets in Iraq were small groups of infantry dashing between covers, the fast-reacting, stabilized 25mm gun on the Bradley proved highly effective. Its high explosive round was excellent against personnel, while the armor-piercing rounds could easily deal with light armored vehicles. At times, Iraqi infantry approached too close for the Abrams tanks to depress their weapons sufficiently to engage them. In these cases, the following Bradleys would open fire. The automatic cannons and grenade launchers of the infantry fighting vehicles were also excellent against lightly constructed buildings. Against better-built, larger structures, tank main guns, aircraft-delivered weapons, or artillery were more useful. In addition, there were a few tank-on-tank engagements. In those cases coalition tank main guns were the preferred weapon.

The main disadvantage of infantry fighting vehicles was that they had less protection than tanks. While RPG–7 rounds would only rarely penetrate tanks, infantry fighting vehicles were far more vulnerable. That led to the technique of placing tanks in the lead and, in the case of the Marines, the use of considerable amounts of dismounted infantry around vehicles, especially in built-up areas. The high explosive version of the RPG–7 could not penetrate any of the infantry fighting vehicles, but the shaped charge version normally would. Army and Marine personnel cited numerous cases in which external gear on the Bradleys and AAVs (such as sea or duffle bags) often caused RPGs to detonate prematurely, usually negating the shaped charge effect against the hull. Additionally, the front-mounted engines of the Bradley and AAV protected the crew and passengers. If an RPG penetrated the front of the vehicle, the engine would absorb the shaped charge effect. Although the vehicle would then

be a mobility kill, few personnel casualties would result. Although the infantry fighting vehicles were more vulnerable than tanks, there were few catastrophic kills. Probably the worst vehicle loss occurred when a Marine AAV near An Nasiriyah was struck in the rear by an RPG, exploding a large load of mortar ammunition and causing numerous casualties.

Mechanized infantry and tanks formed an inseparable team, with infantry fighting vehicles closely following tanks. For the Army, Marine, and British mechanized infantry and armor played to each other's strengths and compensated for each other's weaknesses.

The U.S. and British armies both augmented their light infantry with armor. The British stated that their light infantry in 3d Commando and 16th Air Assault Brigades always wanted support from Challenger tanks and Warrior infantry fighting vehicles from 7th Armored Brigade. Challenger 2 tank platoons and companies were attached to light infantry battalions, especially when required to enter urban areas where heavy resistance was expected. Similarly, V Corps withdrew two armor/mechanized infantry task forces from 3d Infantry Division to provide armor support to 101st Airborne (Air Assault) and 82d Airborne Divisions as they cleared built-up areas behind 3d Infantry's advance.

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Marine tanks moving along Highway 8 in Baghdad

1st Marine Division (Paul L. Anstine)

Insights for the Future

Every operation has distinct features. *Iraqi Freedom* was unusual in that the enemy had large conventional forces, yet fought mostly as smaller unconventional elements that had little antiarmor capability (probably due to the collapse of most Iraqi conventional units). Even so, the operation suggests the following insights for the future.

Heavy forces were decisive. In Iraq, the United States used a full range of land forces—light, medium, and heavy—but heavy forces were the most important ground combat element. They led the ground advance and destroyed the enemy with direct fire. The heavy land forces received excellent support from artillery and tactical air, including help from attack helicopters. Heavy forces broke enemy resistance in the major cities, leading to collapse of the regime. Light and medium ground units also played important roles, but they generally supported the armored formations. Light units occupied areas bypassed by the fast-moving heavy units, while the British and Marine Corps medium elements performed a reconnaissance role.

Until recently, the Army envisioned equipping all its forces with medium-weight combat systems. That concept now appears premature. The Army still needs the full range of light, medium, and heavy forces to accomplish its missions. Trying to prevail with one force type would be difficult and unwise. Heavy forces, developed to fight similarly equipped Warsaw Pact forces, are still dominant in terrain that permits their use, which includes built-up areas. Indeed, most terrain in Iraq was ideal for heavy armor. Since the Army and Marine Corps must be prepared for operations anywhere in the world, retaining a mix of heavy, medium, and light forces will provide commanders with maximum flexibility.

Judging by the Iraq experience, the Army should plan a heterogeneous force that includes light infantry, medium forces (today equipped with combat systems in the Stryker class and later the Future Combat System), and heavy forces, meaning for the foreseeable future the Abrams-Bradley team. The Future Combat System should replace today's heavy forces only if it offers comparable combat power in close combat, including the sort of messy, unpredictable fighting encountered in Iraq. The British army was planning to retain a mixed heavy-medium-light structure before the recent war in Iraq. British army leaders believe the Iraq experience vindicated that decision.[12]

The Marine Corps should also retain Abrams main battle tanks to give its forces the needed punch. Indeed, Marine infantry were probably more dependent on tank support than their Army mechanized counterparts. The Marines need a better infantry carrier than the AAV–7. During *Iraqi Freedom*, Marine infantry suffered from lack of a vehicle with the firepower and protection of a Bradley. The introduction of the Expeditionary Fighting Vehicle will give Marine infantry a more heavily armed and better-protected vehicle.

Armor compensated for poor situational awareness. The experience in Iraq should deflate expectations for high levels of situational awareness at the lower tactical levels. Army and Marine Corps commanders in Iraq universally agreed that they had poor information about enemy forces. That resulted in U.S. forces usually making contact with the enemy with little or no warning. Eventually, ground units may enjoy much better situational awareness at the tactical level, but only when sensors can penetrate all kinds of cover and concealment, including buildings.

Heavy forces compensated for poor situational awareness by having a high degree of passive protection and overwhelming firepower. It mattered little when Fedayeen Saddam fired first because their weapons only rarely penetrated an Abrams' armor and the act of firing on U.S. armor invited a devastating response. The Fedayeen should, of course, have allowed armored vehicles to pass and opened fire on thin-skinned support vehicles. However, they would have needed enough popular support to keep civilians from warning U.S. forces of their positions, not a sound assumption during Saddam Hussein's regime. Particularly in the Shi'ite south, many Iraqis initially regarded coalition forces as liberators and willingly provided information about pockets of Ba'thist resistance.

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After the fall of the Ba'thist regime, the insurgents became more sophisticated. They learned not to attack in ways that invited devastating responses. They avoided contact by using mortars and improvised explosive devices rather than direct fire. When they did use direct fire, they soon broke contact, having learned that U.S. forces welcomed and always won protracted firefights. Their primary tactic was to halt convoys using an explosive device, take the convoys under fire for a few minutes, and then recede into the populace. It was during this stability phase of operations that the Army introduced its first Stryker-equipped units into northern Iraq.

Against this tactic, U.S. forces required well-protected vehicles with considerable firepower, especially general-purpose machineguns and grenade launchers. There was less use for the heavy firepower of an Abrams tank and for fixed-wing air support because of the need to minimize collateral damage. However, support units discovered that they needed at least some armor protection for vehicles due to the constant threat of ambushes and roadside mines. Today, heavy forces continue to play central roles in protecting convoys and conducting combat patrols.

Situational awareness at the tactical level will continue to improve as land forces acquire new systems, such as unmanned aerial vehicles, to reconnoiter before contact. But for the foreseeable future, especially against irregular forces, land forces will still need protection against enemies who go unseen until they detonate a device or open fire. Armor will continue to play a key role not only for major combat operations, but also during stability operations.

Some pundits predicted the demise of heavy armored vehicles after the Yom Kippur War in 1973. Advances in shaped charge weapons, including shoulder-fired rocket launchers and antitank guided missiles, were supposed to make armor, including the main battle tank, obsolete. The prediction may come true someday, but 30 years later, heavy armored vehicles still dominate the land battle in most terrain types.

Against a better-armed enemy, armor would be more vulnerable than it was against Iraqi forces in 2003. The frontal arc of an Abrams currently resists almost anything an enemy ground force can throw at it, but other parts of the Abrams and all of a Bradley are far more susceptible to damage. For example, modern top-attack missiles could present a severe challenge. However, armor has survived decades of proliferation of antiarmor systems, and remains irreplaceable. The high protection and awesome firepower of heavy forces was a chief reason for the rapid rate of advance and low casualties during *Iraqi Freedom*.

Warfare is evolving rapidly in the computer age, especially in sensing technology, precision guidance, and control of forces. Heavy forces benefit from these advances while continuing to offer

Marines refueling Abrams main battle tanks

1st Marine Division (Paul L. Anstine)

the advantage of survivability. They were developed during World War I to solve the problem of crossing terrain swept by enemy fire. Ninety years later, they still solve this problem despite a wide range of efforts to make them obsolete. It should be no surprise that heavy forces are useful in conventional combat. In Iraq, heavy forces have also proven just as useful in combat against irregular forces employing swarming tactics, even in urban terrain. They were the key to a rapid victory over the Ba'thist regime that saved the lives of not only coalition soldiers but also Iraqi civilians. As transformation plans are refined, it is likely that heavy forces will retain an important role. **JFQ**

NOTES

[1] Anthony H. Cordesman, *The Iraq War: Strategy, Tactics, and Military Lessons* (Washington, DC: Center for Strategic and International Studies, 2003), 37–39.

[2] Insights on the Marines' use of tanks and AAVs were obtained during interviews with 1st Marine Division, Camp Pendleton, California, October 1–3, 2003, and 2d Marine Division, Camp Lejeune, North Carolina, February 2004.

[3] "Operation *Iraqi Freedom*, 3d Infantry Division (Mechanized) 'Rock of the Marne' After Action Report," final draft, May 12, 2003.

[4] "UK Forces' Iraq Lessons Learned Reviewed," *International Defense Digest* (September 2003), 14.

[5] Interviews with British army officers, British Army Doctrine and Development Command, Upavon, UK, July 2003.

[6] Interviews with 1st Brigade, 3d Infantry Division, Fort Stewart, Georgia, October 28, 2003.

[7] "Operation *Iraqi Freedom*," 8–9.

[8] David Talbot, "How Technology Failed in Iraq," *MIT Technology Review* (November 2004).

[9] Interviews with 2d Marine Division, February 2004.

[10] Interviews with 3d Infantry Division and 1st Marine Division, October 2003.

[11] Interviews with 1st Marine Division, Camp Pendleton and 29 Palms Marine Base, California, October 2003.

[12] Discussions with British Army Doctrine and Development Command, Upavon, UK, August 2003.